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(54) **RIDE VEHICLE PASSENGER TRANSFER SYSTEMS AND METHODS**

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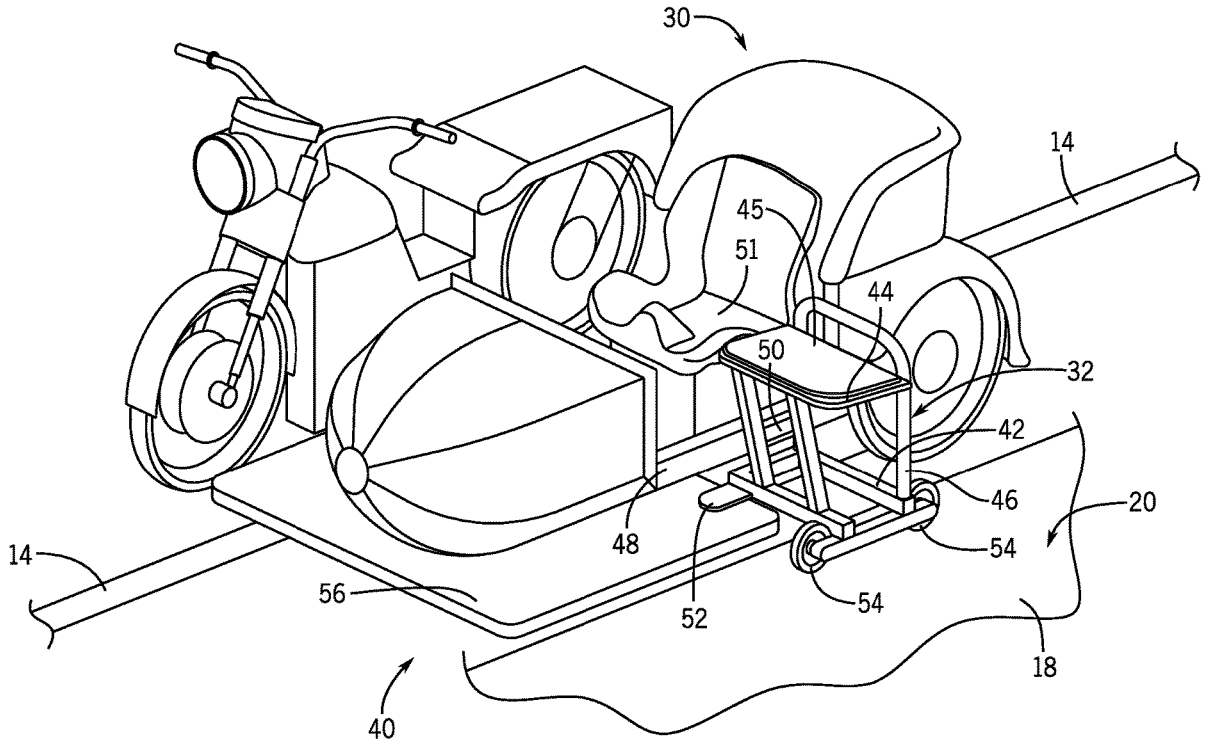
(57) **ABSTRACT**

A transfer device configured to support a passenger for transfer from a mobile chair to a ride seat of a ride vehicle includes a frame coupled to a seating portion, where the seating portion is configured to support the passenger. The transfer device includes at least one wheel coupled to the frame. The transfer device also includes a mounting bracket coupled to the frame and configured to reversibly engage with the ride vehicle. In an engaged configuration, the transfer device is coupled to the ride vehicle such that a seating pan of the seating portion is aligned with the ride seat of the ride vehicle. The transfer device, when engaged, is configured to travel with the ride vehicle while the ride vehicle travels along a track.



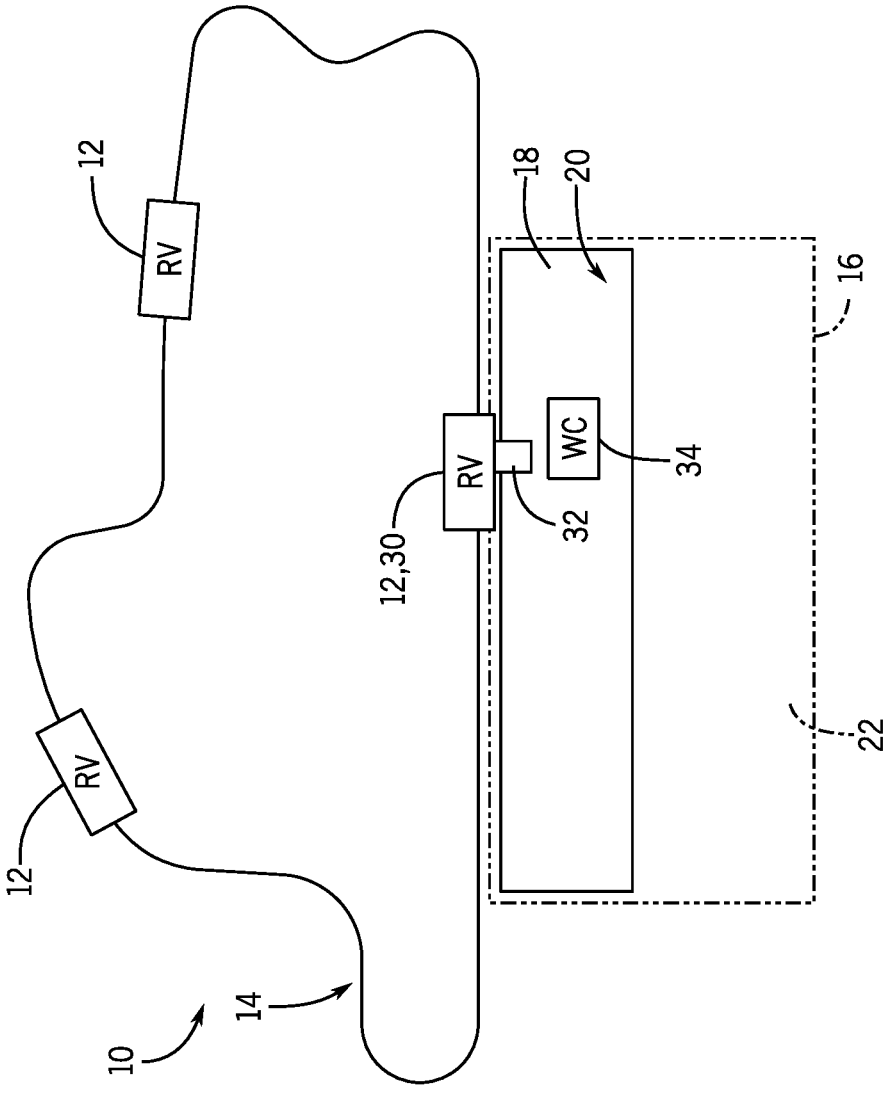


FIG. 1

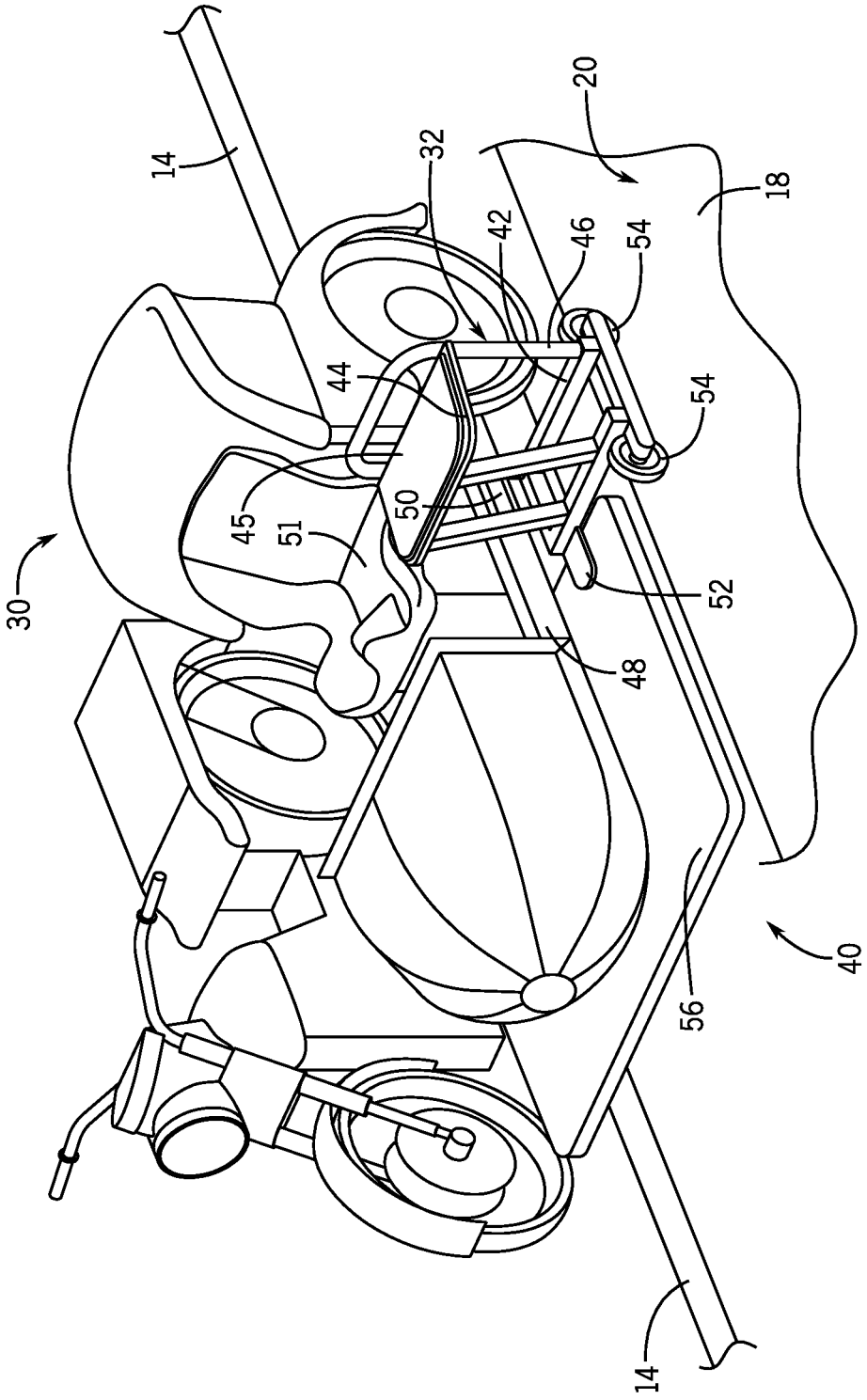


FIG. 2

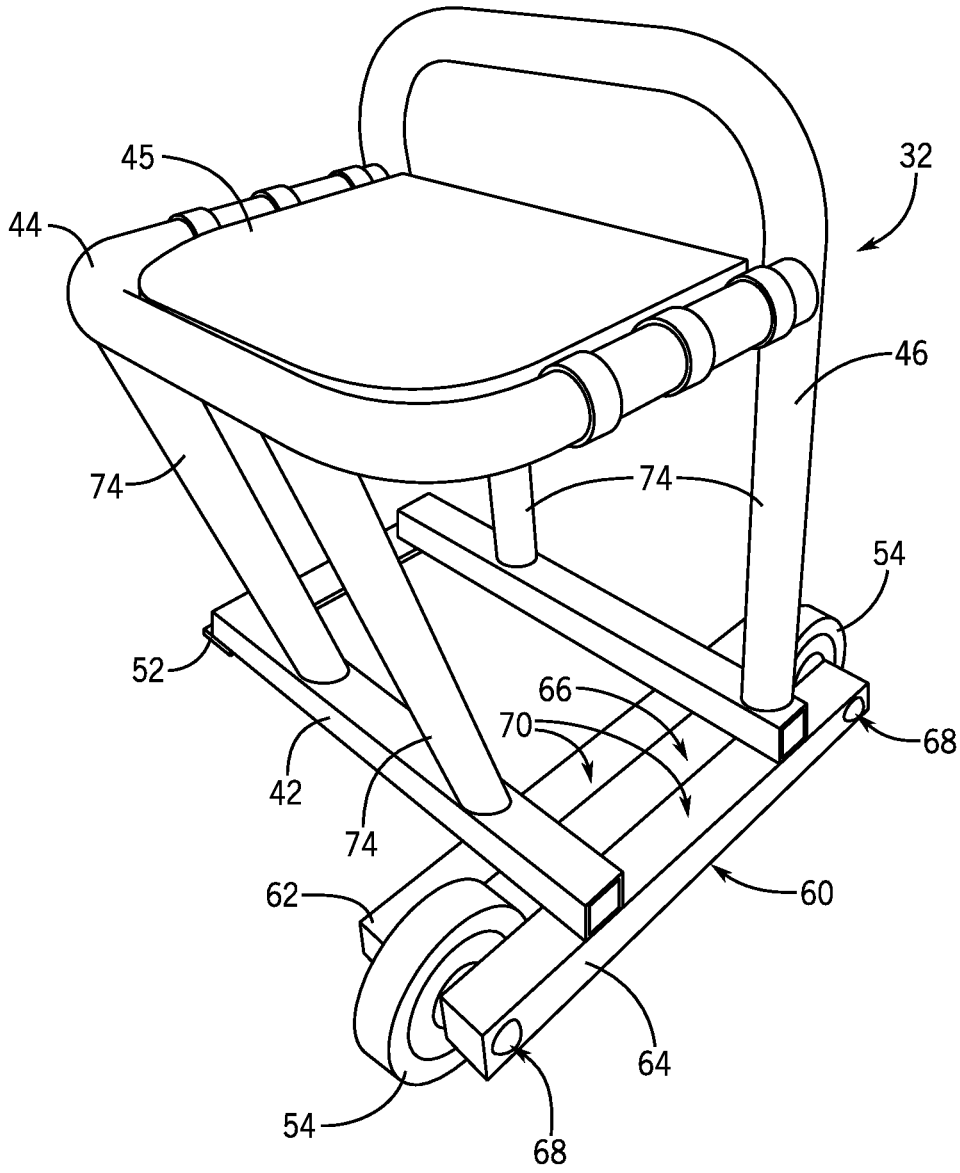


FIG. 3

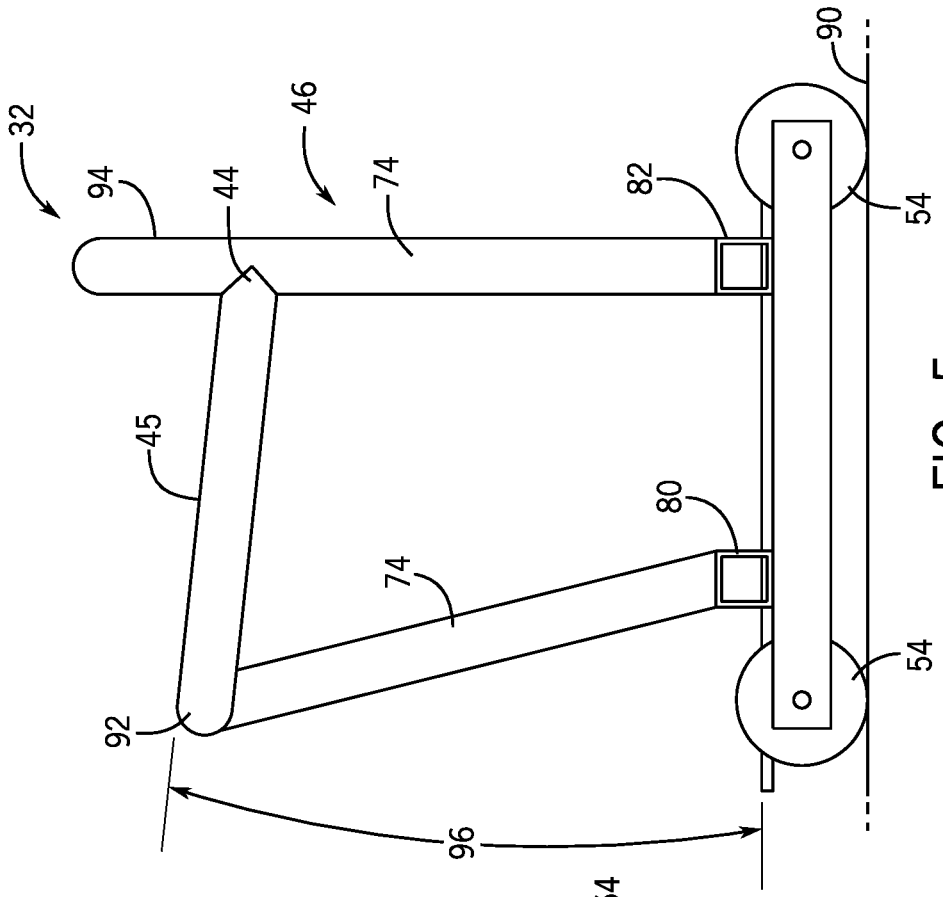

32
94
44
46
74
82
90
54
45
80
74
54
92
96

FIG. 5

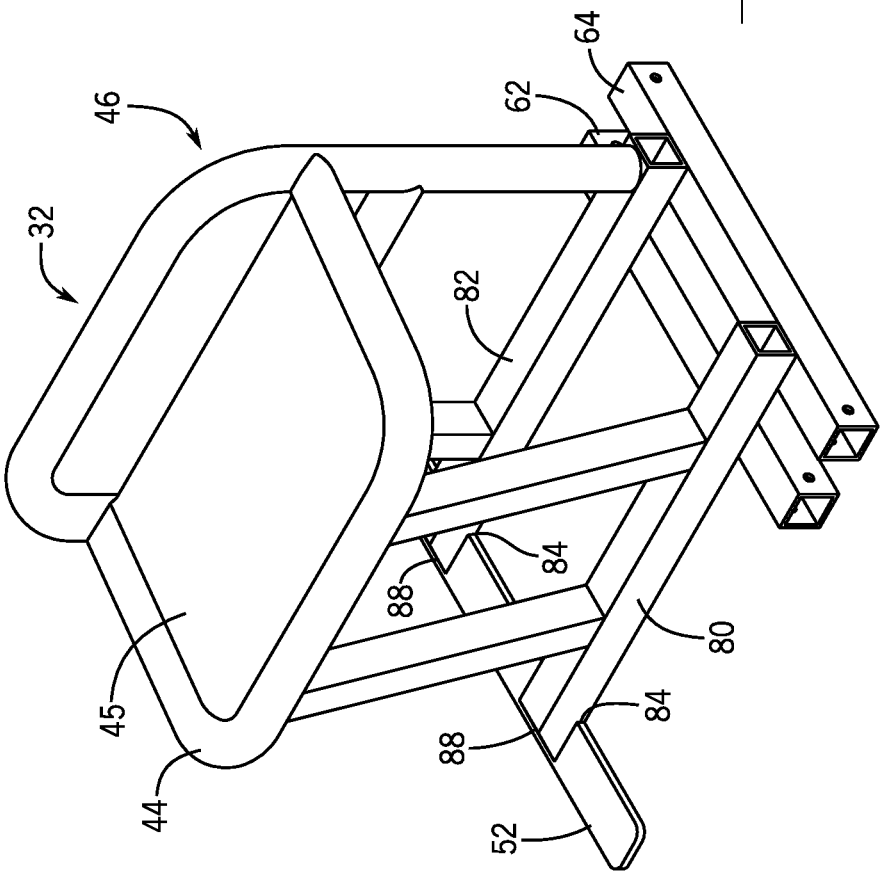

64
62
46
32
82
84
88
80
45
84
88
44
52

FIG. 4

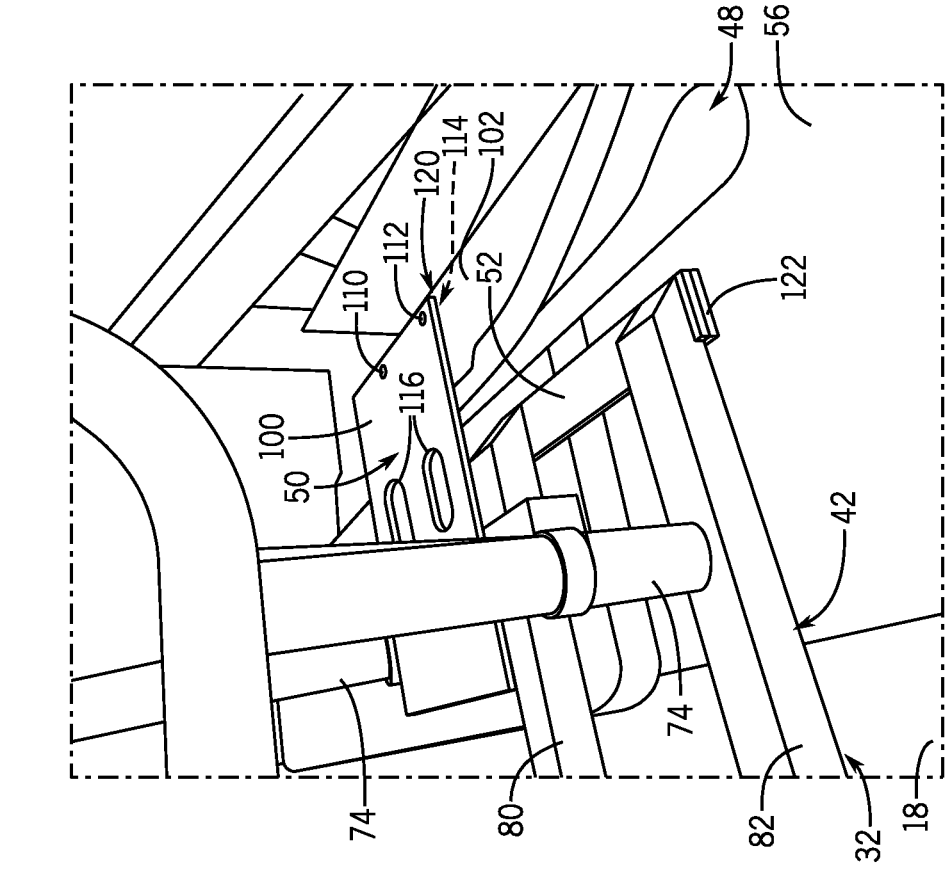

48
56
114
102
120
112
110
52
122
116
100
50
42
74
74
80
82
32
18

FIG. 7

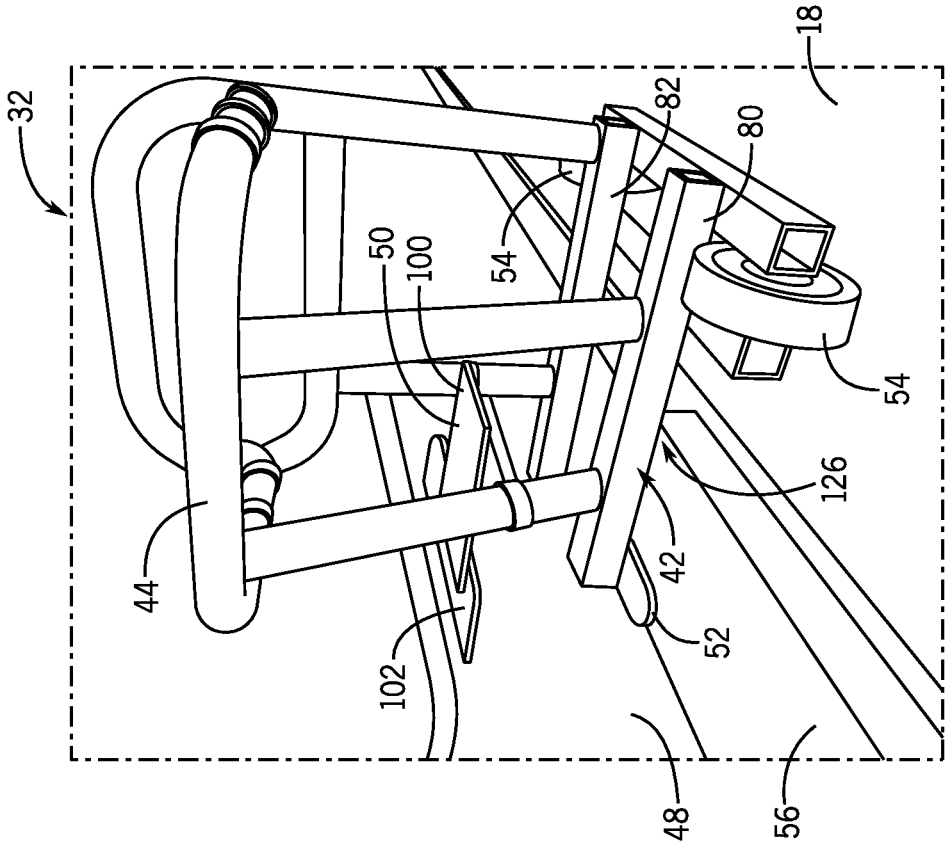

18
32
82
80
50
100
54
54
126
44
42
102
52
48
56

FIG. 6

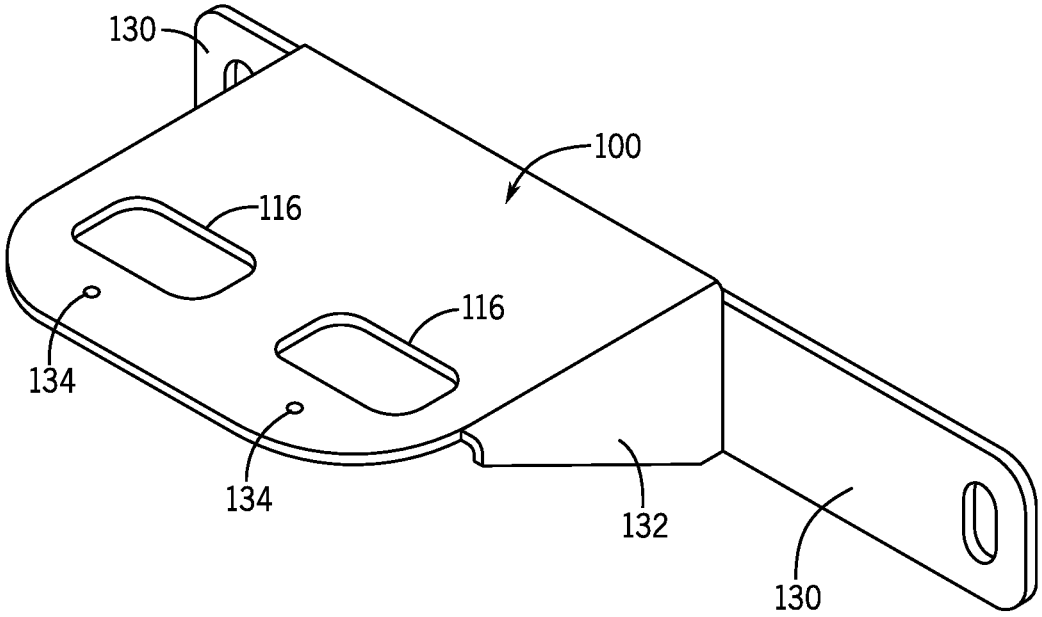


FIG. 8

RIDE VEHICLE PASSENGER TRANSFER SYSTEMS AND METHODS

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to and the benefit of U.S. Provisional Application No. 62/852,022, entitled "RIDE VEHICLE PASSENGER TRANSFER SYSTEMS AND METHODS," filed May 23, 2019, which is hereby incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] The present disclosure relates generally to the field of amusement parks. More particularly, embodiments of the present disclosure relate to systems and methods for transferring passengers into and out of ride vehicles of amusement park ride systems.

[0003] Since the early twentieth century, amusement parks (e.g., theme parks) have substantially grown in popularity. Generally, amusement parks include a wide variety of attraction types useful in providing enjoyment to guests (e.g., families and/or people of all ages) of the amusement park. Indeed, the attractions may include a wide variety of ride vehicles configured to provide varying ride experiences. In some instances, wheelchair-using passengers may require extra assistance, time, and effort to board the ride vehicles (e.g., from a mobile chair or other wheelchair), if they are able to board the ride vehicles at all. For some amusement parks, a select few attractions may include ride vehicles specifically designed to accommodate wheelchair-using passengers. For example, the ride vehicles of such attractions may include a ride seat or section configured to secure a wheelchair of a wheelchair-using passenger to the ride vehicle. Accordingly, the ride vehicle may transport the wheelchair-using passenger and their wheelchair along a path (e.g., a track) of the amusement park attraction. Various constraints, such as dynamics of the attraction, may differ widely between attractions, and therefore necessitate a unique design for each attraction in aiding the boarding of wheelchair-using passengers. As such, the design and implementation of such ride vehicles may be costly, which may limit the number of such attractions included in an amusement park.

SUMMARY

[0004] Certain embodiments commensurate in scope with the present disclosure are summarized below. These embodiments are not intended to limit the scope of the disclosure, but rather these embodiments are intended only to provide a brief summary of certain disclosed embodiments. Indeed, the present disclosure may encompass a variety of forms that may be similar to or different from the embodiments set forth below.

[0005] In an embodiment, a transfer device configured to support a passenger for transfer from a mobile chair to a ride seat of a ride vehicle includes a frame coupled to a seating portion, where the seating portion is configured to support the passenger. The transfer device includes at least one wheel coupled to the frame. The transfer device also includes a mounting bracket coupled to the frame and configured to reversibly engage with the ride vehicle. In an engaged configuration, the transfer device is coupled to the ride vehicle such that a seating pan of the seating portion is aligned with the ride seat of the ride vehicle. The transfer device, when engaged, is configured to travel with the ride vehicle while the ride vehicle travels along a track.

[0006] In an embodiment, a passenger transfer system includes a ride vehicle configured to move along a track of an amusement park attraction and a ride vehicle seating pan configured to support a passenger. The passenger transfer system includes a loading belt positioned adjacent to the track and having a loading surface configured to translate along the track with the ride vehicle. The passenger transfer system also includes a transfer device configured to removably couple to the ride vehicle, where the transfer device is configured to support the passenger as the passenger transfers from a mobile chair positioned on the loading belt to the ride vehicle seating pan of the ride vehicle.

[0007] In an embodiment, a transfer device configured to support a passenger as the passenger transfers from a mobile chair to a ride vehicle seating pan of a ride vehicle includes a frame having a lower chassis, where the lower chassis includes a foot and at least one wheel rotatably coupled to the lower chassis. The frame also includes a seating portion coupled to the lower chassis and configured to support the passenger. The transfer device includes a mounting bracket coupled to the frame and configured to engage with the ride vehicle in an engaged configuration and to be removed from the ride vehicle in a disengaged configuration. In the engaged configuration, the transfer device is coupled to the ride vehicle and configured to travel with the ride vehicle. At least a portion of the ride vehicle seating pan is aligned with a seating pan on the transfer device in the engaged configuration.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] These and other features, aspects, and advantages of the present disclosure will become better understood when the following detailed description is read with reference to the accompanying drawings in which like characters represent like parts throughout the drawings, wherein:

[0009] FIG. **1** is a schematic top view of an embodiment of a ride system, in accordance with aspects of the present disclosure;

[0010] FIG. **2** is a perspective view of an embodiment of a passenger transfer device in an engaged configuration with a ride vehicle, in accordance with aspects of the present disclosure;

[0011] FIG. **3** is a perspective view of an embodiment of a passenger transfer device, in accordance with aspects of the present disclosure;

[0012] FIG. **4** is a perspective view of an embodiment of a frame of a passenger transfer device, in accordance with aspects of the present disclosure;

[0013] FIG. **5** is a side view of an embodiment of a passenger transfer device, in accordance with aspects of the present disclosure;

[0014] FIG. **6** is a perspective view of an embodiment of a passenger transfer device in an engaged configuration with a ride vehicle, in accordance with aspects of the present disclosure;

[0015] FIG. **7** is a perspective view of an embodiment of a portion of a passenger transfer device in an engaged configuration with a ride vehicle, in accordance with aspects of the present disclosure; and

[0016] FIG. **8** is a perspective view of an embodiment of a mounting bracket for a passenger transfer device, in accordance with aspects of the present disclosure.

DETAILED DESCRIPTION

[0017] One or more specific embodiments of the present disclosure will be described below. These described embodiments are only examples of the presently disclosed techniques. Additionally, in an effort to provide a concise description of these embodiments, all features of an actual implementation may not be described in the specification. It should be appreciated that in the development of any such actual implementation, as in any engineering or design project, numerous implementation-specific decisions must be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which may vary from one implementation to another. Moreover, it should be appreciated that such a development effort might be complex and time consuming, but would nevertheless be a routine undertaking of design, fabrication, and manufacture for those of ordinary skill having the benefit of this disclosure.

[0018] When introducing elements of various embodiments of the present disclosure, the articles "a," "an," and "the" are intended to mean that there are one or more of the elements. The terms "comprising," "including," and "having" are intended to be inclusive and mean that there may be additional elements other than the listed elements. Additionally, it should be understood that references to "one embodiment" or "an embodiment" of the present disclosure are not intended to be interpreted as excluding the existence of additional embodiments that also incorporate the recited features.

[0019] Provided herein is a transfer device (e.g., a passenger transfer device) configured to aid in the transfer of a wheelchair-using passenger from a wheelchair into a ride vehicle. Accordingly, the wheelchair-using passenger may board a conventional ride seat of the ride vehicle while a wheelchair or other mobile chair of the wheelchair-using passenger is not loaded into the ride vehicle. Particularly, as discussed below, the transfer device may be configured to bridge a gap between the wheelchair of the wheelchair-using passenger and the ride vehicle to which the wheelchair-using passenger is attempting to transfer. The transfer device may be configured to engage with the ride vehicle such that the transfer device is at least partially supported by the ride vehicle. The transfer device may be configured to provide support to the wheelchair-using passenger as the wheelchair-using passenger moves across the transfer device from the wheelchair and into the ride vehicle. To this end, the transfer device may facilitate transfer of the wheelchair-using passenger to and from a ride seat of the ride vehicle. Additionally, the transfer device may enable various amusement park attractions to comply with the Americans with Disabilities Act (ADA).

[0020] Turning now to the drawings, FIG. **1** is a schematic of an embodiment of a ride system **10** (e.g., an attraction) of an amusement park. In the illustrated embodiment, the ride system **10** includes one or more ride vehicles **12** that are configured to travel along a track **14** (e.g., a path) of the ride system **10**. A portion of the track **14** is configured to extend along and/or to extend through an exchange area **16** of the ride system **10**. The exchange area **16** is configured to facilitate loading and unloading of passengers (e.g., guests of the amusement park) from the ride vehicles **12**. For example, when approaching and/or entering the exchange area **16**, the ride vehicles **12** may slow to a loading speed, which may be less than a riding speed at which the ride vehicles **12** travel along a remaining portion of the track **14**. The exchange area **16** may include a translating belt **18** (e.g., a loading belt) that is positioned adjacent to the track **14** and configured to provide a loading/unloading surface **20** from which passengers may easily board into or dismount from the moving ride vehicles **12**. In particular, the belt **18** may operate at a traveling speed that enables the loading/unloading surface **20** to translate along a stationary platform **22** of the exchange area **16** at a speed that is substantially equal to the loading speed of the ride vehicles **12**.

[0021] Accordingly, to board one of the ride vehicles **12**, a passenger enters the unloading/loading surface **20** from the stationary platform **22** such that the belt **18** may move the passenger along the exchange area **16** and with the ride vehicle **12**. Accordingly, the belt **18** may ensure that a relative speed (e.g., a speed differential) between the passenger positioned on the belt **18** and a particular ride vehicle **12**, referred to hereinafter as a ride vehicle **30**, traveling along the track **14** in the exchange area **16** is relatively negligible, thereby facilitating boarding of the passenger into the ride vehicle **30**. Indeed, the passenger may step into or otherwise enter a cabin of the ride vehicle **30** without manually traveling (e.g., walking) alongside the ride vehicle **30** at the loading speed of the ride vehicle **30**. The ride vehicle **30** may subsequently exit the exchange area **16** and travel along the track **14** upon completion of the boarding operation. When returning to the exchange area **16**, the passenger may dismount from the ride vehicle **30** in the reverse order discussed above. Specifically, the passenger may dismount from the ride vehicle **30** onto the belt **18** before stepping off of the belt **18** and onto the stationary platform **22**.

[0022] In some instances, a wheelchair-using passenger may attempt to board into or dismount from one of the moving ride vehicles **12**, such as the ride vehicle **30**. The wheelchair-using passenger may utilize a transfer device **32** to increase an ease and an efficiency of boarding into or dismounting from the ride vehicles **12**. For example, as discussed in detail below, the transfer device **32** is configured to removably couple to any of the ride vehicles **12**, such as the ride vehicle **30**, thereby enabling an operator (e.g., an employee operating the ride system **10**) to engage (e.g., toollessly and/or removably/reversibly couple) the transfer device **32** with the ride vehicle **30** as the ride vehicle **30** enters the exchange area **16** from a remaining portion of the track **14**. As such, the ride vehicle **30** may move the transfer device **32** along the exchange area **16** at the loading speed.

[0023] To board a wheelchair-using passenger into the ride vehicle **30**, the wheelchair-using passenger may be wheeled from the stationary platform **22** onto the loading/unloading surface **20** of the belt **18** (e.g., via a wheelchair **34** or other mobile chair) and positioned adjacent to the transfer device **32** such that the transfer device **32** is positioned between the wheelchair **34** and the ride vehicle **12**. The transfer device **32** enables the wheelchair-using passenger to dismount from the wheelchair **34** and to temporarily support themselves on the transfer device **32**. Accordingly, the wheelchair-using passenger may subsequently board the ride vehicle **30** from the transfer device **32**. Upon completion of the boarding procedure, the transfer device **32** may be decoupled from the

ride vehicle **30** (e.g., via assistance from the operator) and the wheelchair **34** of wheelchair-using passenger may be removed from the belt **18**, thereby enabling the wheelchair-using passenger to enjoy the ride provided by the ride system **10**. The wheelchair-using passenger may utilize the transfer device **32** to dismount from the ride vehicle **30** upon completion of the ride by executing the aforementioned steps in reverse order.

[0024] FIG. **2** is a perspective view of an embodiment of the transfer device **32** and the ride vehicle **30** in an engaged configuration **40**. In the illustrated embodiment, the transfer device **32** includes a lower chassis **42** and a seating structure **44** (e.g., a seating portion) coupled to a seating pan **45**. The seating structure **44** may collectively form a frame **46** of the transfer device **32**. The frame **46** may be configured to interface (e.g., removably couple) with one or more areas of the ride vehicle **30** to enable an operator, guest, or other person using the transfer device **32** to quickly couple or decouple the transfer device **32** from a chassis **48** or another area of the ride vehicle **30**. Particularly, as discussed below, the frame **46** may include an interface feature **50** that is configured to enable removable coupling of the transfer device **32** to the ride vehicle **30**. Indeed, the interface feature **50** may be configured to enable persons utilizing the transfer device **32** to couple the transfer device **32** to and to decouple the transfer device **32** from the ride vehicle **30** without the use of dedicated tools or equipment. In an embodiment, while the transfer device **32** couples to and engages with the ride vehicle **30**, the transfer device **32** may not include features that engage with or couple to the mobile chair **34**. That is, the transfer device **32** may be configured to be used in conjunction with a variety of mobile chairs **34** of various configurations.

[0025] When in the engaged configuration **40**, the seating structure **44** is aligned at least in part with a ride vehicle seating pan **51** of the ride vehicle **30**. That is, the transfer of the passenger from the seating pan **45** of the transfer device **32** to the ride vehicle seating pan **51** may occur by sliding the passenger across the seating pan **45** and across or down into the ride vehicle seating pan **51**. Accordingly, when the transfer device **32** is engaged with the ride vehicle **30**, the ride vehicle seating pan **51** may be generally planar with the seating pan **45** of the transfer device **32**. In an embodiment, the ride vehicle seating pan **51** may be contoured or non-planar. However, when the transfer device **32** is engaged with the ride vehicle **30**, height differences between the ride vehicle seating pan **51** and the seating pan **45** of the transfer device **32** may be within a predetermined tolerance (e.g., 10 cm or less) in either an up or down (toward the loading surface **22**) direction.

[0026] The transfer device **32** may include a foot **52** (e.g., a protrusion extending from the lower chassis **42**) and one or more wheels **54** that are configured to support a weight of the transfer device **32** and a weight of a wheelchair-using passenger that may be seated on the transfer device **32**. For example, in the engaged configuration **40** of the transfer device **32**, the foot **52** may be configured to engage with (e.g., rest on) a portion of the ride vehicle **30** chassis **48**, such as a barge board **56**, while the wheels **54** engage with (e.g., rest on) the loading/unloading surface **20** of the belt **18**. Accordingly, the foot **52** and the wheels **54** may cooperate to distribute a weight of the transfer device **32** and/or a weight of the wheelchair-using passenger supported by the transfer device **32** between the chassis **48** of the ride vehicle **30** and the belt **18**. The wheels **54** permit minor movement of the transfer device **32** such that any potential speed differential between the loading speed of the ride vehicle **30** (e.g., relative to the stationary platform **22** of the exchange area **16**) and the traveling speed of the loading/unloading surface **20** (e.g., relative to the stationary platform **22** of the exchange area **16**) does not result in interference between the ride vehicle **30** and the belt **18**.

[0027] To better illustrate the features of the transfer device **32** disclosed herein, FIG. **3** is a perspective view of an embodiment of the transfer device **32**. In the illustrated embodiment, the transfer device **32** includes a roller assembly **60** that is coupled to the lower chassis **42**. In an embodiment, the roller assembly **60** includes a first rail **62**, such as an inner rail, and a second rail **64**, such as an outer rail, which are positioned adjacent to one another and separated by a gap **66**. The gap **66** may be configured to receive the wheels **54**, which may be rotatably coupled to the first and second rails **62**, **64** via respective axle assemblies **68**. For example, the axle assemblies **68** may each include an axle shaft that is configured to extend through apertures formed within the first and second rails **62**, **64**. The axle shafts are configured to engage with corresponding bearings or bushings included in the wheels **54**, such that the wheels **54** may be rotatably coupled to the roller assembly **60** via the axle shafts.

[0028] Although the illustrated embodiment of the transfer device **32** includes the first rail **62** and the second rail **64**, it should be understood that, in other embodiments, the first rail **62** or the second rail **64** may be omitted from the roller assembly **60**. Indeed, in such embodiments, the axle assemblies **68** may be configured to support the wheels **54** by means of engagement with the first rail **62** or the second rail **64**. Moreover, it should be appreciated that the roller assembly **60** may include any suitable quantity of wheels **54** that are configured to support the transfer device **32**. For example, the roller assembly **60** may include 1, 2, 3, 4, 5, or more than five wheels **54**.

[0029] In certain embodiments, the wheels **54** may be implemented as casters that are configured to pivot (e.g., swivel) relative to the roller assembly **60** to enable the transfer device **32** to translate along various directions. For example, the casters may be configured to pivot about an axis that extends generally orthogonal to a plane formed by respective upper surfaces **70** of the first and second rails **62**, **64**. In this manner, the casters may enable the transfer device **32** to travel along a contoured path and/or rotate about a stationary point relative to the ground. In further embodiments, the wheels **54** may include tracks or any other suitable rollers or wheels **54** that are configured to facilitate movement of the transfer device **32** across a surface, such as the loading/unloading surface **20**.

[0030] The transfer device **32** may include one or more support braces **74** that are configured to couple the seating structure **44** to the lower chassis **42**. In an embodiment, the support braces **74** and/or the seating structure **44** may be formed from tubing (e.g., round tubing or oval tubing) that may enable a wheelchair-using passenger interacting with the transfer device **32** to comfortably hold the transfer device **32** for support. In other words, the tubing used to construct the support braces **74** and the seating structure **44** may serve as hand rails that enable the wheelchair-using passenger to more easily mount or dismount from the transfer device **32**. The lower chassis **42** may be formed

from tubing having a quadrilateral cross-section (e.g., square tubing, rectangular tubing) or may be formed from the round or oval tubing used to construct the support rails and/or the seating structure **44**. In any case, the tubing used to construct the transfer device **32** may be formed from aluminum, stainless steel, polymers (e.g., plastics), or any other suitable material or combination of materials. The various tubes used to construct the transfer device **32** may be coupled to one another via suitable fasteners, adhesives (e.g., bonding glue), or a metallurgical process (e.g., welding or brazing).

[0031] As shown in the illustrated embodiment, the seating structure **44** may include the seating pan **45** that is coupled to the tubing of the seating structure **44** (e.g., via one or more clamps). In an embodiment, the seating pan **45** may include a solid or perforated sheet of material, such as a sheet of aluminum. In certain embodiments, the seating pan **45** may be covered with a cushioning material, such as foam or vinyl, which may enhance a comfort provided by the seating pan **45** when a wheelchair-using passenger is seated on the seating pan **45**.

[0032] FIG. **4** is a perspective view of an embodiment of the frame **46** of the transfer device **32**. In an embodiment, the lower chassis **42** may include a first chassis rail **80** and a second chassis rail **82** that extend generally orthogonal to the first and second rails **62**, **64** of the roller assembly **60**. As shown in the illustrated embodiment, the foot **52** may be received within respective notches **84** formed within the first and second chassis rails **80**, **82**. In an embodiment, the foot **52** may be rigidly coupled to the first and second chassis rails **80**, **82** (e.g., via a welding process). However, as discussed below, in other embodiments, a position of the foot **52** (e.g., with respect to the first and second chassis rails **80**, **82**) may be adjustable. The first chassis rail **80**, the second chassis rail **82**, or both, may include a chamfered end portion **88** that is configured to provide additional clearance between the first chassis rail **80** and/or the second chassis rail **82** and an enclosure (e.g., a decorative body panel) of the ride vehicle **30** during attaching/detaching operations of the transfer device **32** on the ride vehicle **30**. Accordingly, the chamfered end portions **88** may ensure that the lower chassis **42** does not interfere with the enclosure (e.g., the chassis **48**, a body or aesthetic covering) of the ride vehicle **30** when an operator or other user attempts to transition the transfer device **32** between the engaged configuration **40**, in which the transfer device **32** is coupled to the ride vehicle **30**, and a disengaged configuration, in which the transfer device **32** is decoupled from the ride vehicle **30**.

[0033] FIG. **5** is a side view of an embodiment of the transfer device **32**. In an embodiment, the seating structure **44** may be configured to position the seating pan **45** at an incline with respect to a ground **90** (e.g., the loading/unloading surface **20**). That is, the seating pan **45** may slope downward (e.g., with respect to the ground **90**) from a front portion **92** of the seating structure **44** to a rear portion **94** (e.g., a backrest) of the seating structure **44**. In an embodiment, the incline of the seating pan **45** may be approximately equal to an incline of a seating structure **44** of typical wheelchairs that may be used by wheelchair-using passengers. Accordingly, a wheelchair-using passenger may be placed in a familiar seating position when transferring from the wheelchair to the transfer device **32**. As a non-limiting example, an angle of the incline **96** may be approximately 6 degrees. However, it should be understood that, in other embodiments, the seating pan **45** may be positioned at any other suitable angle with respect to the ground **90**.

[0034] FIG. **6** is a perspective view of an embodiment of the transfer device **32** in the engaged configuration **40**, illustrating the transfer device **32** is coupled to the ride vehicle **30** to facilitate loading or unloading of wheelchair-using passengers from the ride vehicle **30**. As briefly discussed above, the transfer device **32** may include the interface feature **50** that is configured to facilitate removable coupling of the transfer device **32** to the ride vehicle **30**. For example, the interface feature **50** may include a mounting bracket **100** that is coupled to the frame **46** of the transfer device **32** or formed integrally with the frame **46**. Particularly, the mounting bracket **100** may be coupled to one or more of the support braces **74** of the frame **46** via suitable fasteners. As discussed in detail below, the mounting bracket **100** may include one or more mating features (e.g., pins, rods, pegs) that extend from the mounting bracket **100** and are configured to engage with complementary mating feature/s (e.g., apertures, recesses) formed within a receiving bracket **102** of the ride vehicle **30**. Accordingly, engagement between the pins of the mounting bracket **100** and the apertures of the receiving bracket **102** may enable the interface feature **50** to block lateral movement of the transfer device **32**, across the ground **90**, relative to the ride vehicle **30**. For clarity, as used herein, the mounting bracket **100** and the receiving bracket **102** may be collectively referred to as the interface feature **50**.

[0035] To better illustrate the engagement between the mounting bracket **100** and the receiving bracket **102**, FIG. **7** is a perspective view of an embodiment of a portion of transfer device **32** engaged with the ride vehicle **30**. As shown in the illustrated embodiment, the mounting bracket **100** includes a first pin **110** and a second pin **112** that are configured to engage with corresponding apertures **114** formed within the receiving bracket **102** of the ride vehicle **30**. It should be understood that the complementary mating features (e.g., pins **110**, **112** and apertures **114**) of the mounting bracket **100** and the receiving bracket **102** may be exchanged in an embodiment. To couple the transfer device **32** to the ride vehicle **30**, an operator of the ride system **10** may first pivot the transfer device **32** in a first direction to lift the foot **52** of the transfer device **32** above an upper surface of the barge board **56**. The operator may subsequently translate the transfer device **32** toward the ride vehicle **30** and align the first and second pins **110**, **112** with their corresponding apertures **114** formed within the receiving bracket **102**. Upon alignment of the first and second pins **110**, **112** with the apertures **114**, the operator may pivot the transfer device **32** in a second direction, opposite to the first direction, to lower the first and second pins **110**, **112** into their respective apertures **114** and to place the foot **52** atop the upper surface of the barge board **56**. In certain embodiments, the mounting bracket **100** may include one or more viewing apertures **116** formed therein that enable the operator to more easily determine respective positions of the first and second pins **110**, **112** relative to the apertures **114**. Accordingly, the viewing apertures **116** may facilitate alignment of the first and second pins **110**, **112** with the apertures **114**.

[0036] In an embodiment, an axial gap **120** may remain between the mounting bracket **100** and the receiving bracket **102** when the foot **52** is placed atop the barge board **56** in the engaged configuration **40** of the transfer device **32**. In this

manner, the mounting bracket **100** may not be exposed to a force associated with a weight of the transfer device **32** and/or a weight of a wheelchair-using passenger seated on the transfer device **32**. Indeed, the axial gap **120** may ensure that the mounting bracket **100** and/or the receiving bracket **102** is not bent or otherwise deformed due to excessive loading placed on either of these brackets **100**, **102**. Indeed, the foot **52** and the wheels **54** of the transfer device **32** may cooperate to support substantially all of the weight of the transfer device **32** and/or the weight of the wheelchair-using passenger positioned on the transfer device **32**. As such, the mounting bracket **100** and the receiving bracket **102** may be sufficiently sized, in particular, to block translational movement (e.g., along a plane defined by the belt **18**) of the transfer device **32** relative the ride vehicle **30**, instead of to support a weight of the transfer device **32** and/or a weight of the wheelchair-using passenger supported by the transfer device **32**. It should be appreciated that, in an embodiment, the apertures **114** of the receiving bracket **102** may be formed (e.g., drilled) within a portion of the chassis **48** of the ride vehicle **30**, instead of the receiving bracket **102**, such that the receiving bracket **102** may be omitted from the ride vehicle **30**. Moreover, in other embodiments, the mounting bracket **100** may be configured to rest on the receiving bracket **102**, such that substantially no axial gap extends between the mounting bracket **100** and the receiving bracket **102**.

[0037] In an embodiment, the first and second pins **110**, **112** may include generally cylindrical pegs that each have a diameter that is less than a diameter of the corresponding apertures **114** formed within the receiving bracket **102**. Accordingly, an operator of the ride system **10** may more easily align the first and second pins **110**, **112** with the apertures **114** when engaging the transfer device **32** with the ride vehicle **30**. In other embodiments, the first and second pins **110**, **112** may include a generally conical shape that facilitates alignment of the first and second pins **110**, **112** with their respective apertures **114** in the receiving bracket **102**. In certain embodiments, the first pin **110** and the aperture **114** (e.g., in the receiving bracket **102**) associated with the first pin **110** may include a cross-sectional shape that is different from a cross-sectional shape of the second pin **112** and the aperture **114** (e.g., in the receiving bracket **102**) associated with the second pin **112**. Accordingly, the first pin **110** may be unable to extend into the second aperture **114** of the receiving bracket **102** and the second pin **112** may be unable to extend into the first aperture **114** of the receiving bracket **102**. In this manner, the first and second pins **110**, **112** may block the mounting bracket **100** from engaging with the receiving bracket **102** in a misaligned manner.

[0038] In certain embodiments, the first and second pins **110**, **112** and the receiving bracket **102** may be formed from the same material type. Suitable bushings (e.g., replaceable bushing) may be placed within the apertures **114** and configured to receive the first and second pins **110**, **112**. Accordingly, such bushings may reduce or substantially eliminate wear (e.g., abrasion) that may occur between the first and second pins **110**, **112** and the apertures **114** after multitudinous use cycles of the transfer device **32**. In further embodiments, the first and second pins **110**, **112** may be formed form a material that is softer (e.g., more malleable) than a material from which the receiving bracket **102** is formed. Accordingly, the first and second pins **110**, **112** may incur wear over time instead of the corresponding apertures **114** formed in the receiving bracket **102**, and may be replaced upon incurring such wear. That is, the first and second pins **110**, **112** may be removable coupled to the mounting bracket **100** to enable removable and replacement of the first and second pins **110**, **112**.

[0039] In an embodiment, a spacer **122** may be coupled to a lower surface of the foot **52** and configured to contact the barge board **56** when the transfer device **32** is in the engaged configuration **40** with the ride vehicle **30**. The spacer **122** may be formed from, for example, rubber, cork, polymeric materials, or other suitable materials that may be configured to mitigate or substantially reduce wear (e.g., scratching) of the barge board **56** due to repeated engagement with the foot **52**. A thickness of the spacer **122** may be selected to ensure that the axial gap **120** between the mounting bracket **100** and the receiving bracket **102** has a desired width. Indeed, in the illustrated configuration of the transfer device **32**, increasing a thickness of the spacer **122** may increase a width of the axial gap **120**, while decreasing a thickness of the spacer **122** may decrease a width of the axial gap **120**. However, in other embodiments, a width of the axial gap **120** may be adjusted by adjusting a position of the mounting bracket **100** along the support braces **74** of the frame **46**.

[0040] In certain embodiments, the thickness of the spacer **122** may be adjusted to orient the transfer device **32** at a particular angle relative to, for example, the barge board **56** of the ride vehicle **30**. For example, an elongated gap **126**, as shown in FIG. **6**, may extend between a lower surface of the first and second chassis rails **80**, **82** and an upper surface of the barge board **56**. In an embodiment, it may be desirable to maintain the first and second chassis rails **80**, **82** substantially parallel to the barge board **56**, such that a width of the elongated gap **126** is substantially constant along a length of the elongated gap **126**. The width of the spacer **122** may therefore be selected such that the first and second chassis rails **80**, **82** are oriented generally parallel relative to the barge board **56**. As such, the spacer **122** may ensure that first and second chassis rails **80**, **82** do not interfere with (e.g., contact), for example, an edge of the barge board **56**.

[0041] In certain embodiments, a position of the foot **52** itself may be adjustable relative to the lower chassis **42**. For example, the foot **52** may be coupled to the first and second chassis rails **80**, **82** via adjustable couplers (e.g. threaded shafts), which may be used to adjust the position of the foot **52** relative to the lower chassis **42** (e.g., to move a position of the foot **52** closer to or further away from the lower chassis **42**).

[0042] It should be appreciated that, in an embodiment, the foot **52** and/or the mounting bracket **100** may be exchangeable with various feet and/or mounting brackets that are configured (e.g., designed, shaped) to effectively interface with a variety of unique ride vehicles **12**. Accordingly, by reconfiguring the transfer device **32** based on the ride vehicle **12** with which the transfer device **32** is to be employed, an individual transfer device **32** may be utilized to facilitate loading and unloading of wheelchair-using passengers from a variety of different ride vehicles **12**.

[0043] FIG. **8** is a perspective view of an embodiment of the mounting bracket **100**. The mounting bracket **100** may include flanges **130** that enable suitable fasteners to couple the mounting bracket **100** to respective receiving flanges of the frame **46** of the transfer device **32**. In an embodiment, the mounting bracket **100** may include gussets **132** configured to

enhance a structural rigidity of the mounting bracket **100**. As discussed above, the mounting bracket **100** may include the viewing apertures **116** that may facilitate alignment of the first and second pins **110**, **112** with the apertures of the receiving bracket **102**. In an embodiment, the mounting bracket **100** may include fastening apertures **134** that enable suitable fasteners to removably couple the first and second pins **110**, **112** to the mounting bracket **100**.

[0044] As set forth above, embodiments of the present disclosure may provide one or more technical effects useful for transferring wheelchair-using passengers to and from a ride seat of a ride vehicle from a respective wheelchair or other mobile chair of the wheelchair-using passengers. In particular, the transfer device disclosed herein may facilitate transferring of wheelchair-using passengers to and from non-stationary ride vehicles traveling along a loading/unloading area of an amusement park ride. The transfer device of the disclosed embodiments may be used in conjunction with ride vehicles with conventional seats, thereby permitting wheelchair-using passengers to enjoy rides with their companions and without requiring specially-adapted ride seats. The transfer device as disclosed may be used in conjunction with a variety of ride vehicle types. The technical effects and technical problems in the specification are examples and are not limiting. It should be noted that the embodiments described in the specification may have other technical effects and can solve other technical problems.

[0045] While only certain features and embodiments have been illustrated and described, many modifications and changes may occur to those skilled in the art (e.g., variations in sizes, dimensions, structures, shapes and proportions of the various elements, values of parameters (e.g., temperatures, pressures, etc.), mounting arrangements, use of materials, colors, orientations, etc.) without materially departing from the novel teachings and advantages of the disclosed subject matter. The order or sequence of any process or method steps may be varied or re-sequenced according to alternative embodiments. It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the invention. Furthermore, in an effort to provide a concise description of the exemplary embodiments, all features of an actual implementation may not have been described. It should be appreciated that in the development of any such actual implementation, as in any engineering or design project, numerous implementation specific decisions may be made. Such a development effort might be complex and time consuming, but would nevertheless be a routine undertaking of design, fabrication, and manufacture for those of ordinary skill having the benefit of this disclosure, without undue experimentation.

[0046] The techniques presented and claimed herein are referenced and applied to material objects and concrete examples of a practical nature that demonstrably improve the present technical field and, as such, are not abstract, intangible or purely theoretical. Further, if any claims appended to the end of this specification contain one or more elements designated as "means for [perform]ing [a function] . . . " or "step for [perform]ing [a function] . . . ", it is intended that such elements are to be interpreted under 35 U.S.C. 112(f). However, for any claims containing elements designated in any other manner, it is intended that such elements are not to be interpreted under 35 U.S.C. 112(f).

1. A transfer device configured to support a passenger for transfer from a mobile chair to a ride seat of a ride vehicle, comprising:

a frame coupled to a seating portion configured to support the passenger;

at least one wheel coupled to the frame; and

a mounting bracket coupled to the frame and configured to reversibly engage with the ride vehicle, wherein, when in an engaged configuration, the transfer device is coupled to the ride vehicle such that a seating pan of the seating portion is aligned with the ride seat of the ride vehicle and wherein the transfer device is configured to travel with the ride vehicle while the ride vehicle travels along a track when engaged.

2. The transfer device of claim **1**, wherein the mounting bracket comprises a mating feature configured to mate with a complementary feature of the ride vehicle.

3. The transfer device of claim **1**, comprising a foot coupled to the frame, wherein the foot is configured to engage with a chassis of the ride vehicle and the at least one wheel is configured to move relative to a surface to travel with the ride vehicle when the transfer device is engaged with the ride vehicle.

4. The transfer device of claim **1**, wherein the seating portion is oriented at an incline with respect to a translating loading surface upon which the at least one wheel is positioned such that the seating portion slopes downwardly toward the translating loading surface from a front portion of the seating portion to a rear portion of the seating portion.

5. The transfer device of claim **1**, wherein the ride vehicle comprises at least one pin extending therefrom, wherein the mounting bracket comprises at least one aperture formed therein, and wherein the at least one pin of the ride vehicle is configured to engage with the at least one aperture of the mounting bracket in the engaged configuration of the transfer device.

6. The transfer device of claim **1**, wherein the mounting bracket comprises at least one pin extending therefrom, wherein the ride vehicle comprises a receiving bracket having at least one aperture formed therein, and wherein the at least one pin of the mounting bracket is configured to engage with the at least one aperture of the receiving bracket in the engaged configuration of the transfer device.

7. The transfer device of claim **6**, wherein the at least one pin comprises a first pin and a second pin and the at least one aperture comprises a first aperture and a second aperture, wherein respective cross-sectional shapes of the first pin and the first aperture are different than respective cross-sectional shapes of the second pin and the second aperture to block engagement of the first pin with the second aperture and engagement of the second pin with the first aperture.

8. The transfer device of claim **6**, wherein the at least one pin is removably coupled to the mounting bracket.

9. The transfer device of claim **1**, wherein the frame comprises an inner rail and an outer rail separated by a gap, wherein the at least one wheel extends through the gap and is positioned between the inner and outer rails, and wherein an axle assembly is configured to extend through the inner and outer rails to rotatably couple the at least one wheel to the inner and outer rails.

10. A passenger transfer system, comprising:

a ride vehicle configured to move along a track of an amusement park attraction and having a ride vehicle seating pan configured to support a passenger;

a loading belt positioned adjacent to the track and having a loading surface configured to translate along the track with the ride vehicle; and

a transfer device configured to removably couple to the ride vehicle, wherein the transfer device is configured to support the passenger as the passenger transfers from a mobile chair positioned on the loading belt to the ride vehicle seating pan of the ride vehicle.

11. The passenger transfer system of claim **10**, wherein the transfer device comprises at least a portion of an interface feature configured to removably couple the transfer device to the ride vehicle, wherein the interface feature comprises a mounting bracket having a pin extending therefrom.

12. The passenger transfer system of claim **11**, wherein the interface feature further comprises a receiving bracket coupled to the ride vehicle and comprising an aperture formed therein, wherein the transfer device is configured to removably couple to the ride vehicle via engagement of the pin with the aperture.

13. The passenger transfer system of claim **10**, wherein the transfer device comprises a foot configured to engage with a chassis of the ride vehicle in an engaged configuration of the transfer device and a wheel configured to engage with the loading belt, wherein the foot and the wheel are configured to support a weight of the transfer device and a weight of the passenger in the engaged configuration of the transfer device.

14. The passenger transfer system of claim **13**, wherein the foot is coupled to a lower chassis of the transfer device, wherein a gap extends between the lower chassis and the chassis of the ride vehicle in the engaged configuration of the transfer device.

15. The passenger transfer system of claim **10**, wherein the transfer device is positioned in contact with and between the ride vehicle and the mobile chair when engaged with the ride vehicle.

16. The passenger transfer system of claim **10**, wherein a seating pan of the transfer device is aligned with the ride vehicle seating pan when in an engaged configuration such that height differences between the seating pan of the transfer device and the ride vehicle seating pan are within a predetermined tolerance.

17. A transfer device configured to support a passenger as the passenger transfers from a mobile chair to a ride vehicle seating pan of a ride vehicle, comprising:

a frame, comprising:

a lower chassis having a foot and at least one wheel rotatably coupled to the lower chassis; and

a seating portion coupled to the lower chassis and configured to support the passenger; and

a mounting bracket coupled to the frame and configured to engage with the ride vehicle in an engaged configuration and to be removed from the ride vehicle in a disengaged configuration, wherein, in the engaged configuration, the transfer device is coupled to the ride vehicle and configured to travel with the ride vehicle and wherein at least a portion of the ride vehicle seating pan is aligned with a seating pan on the transfer device in the engaged configuration.

18. The transfer device of claim **17**, wherein a translating loading surface is configured to travel along a track of the ride vehicle with the ride vehicle, wherein, in the engaged configuration of the transfer device, the foot is configured to engage with a chassis of the ride vehicle and the at least one wheel is configured to engage with the translating loading surface such that the transfer device moves together with the ride vehicle.

19. The transfer device of claim **18**, wherein, in the engaged configuration of the transfer device, the foot and the wheel are configured to support a weight of the transfer device and a weight of the passenger such that the mounting bracket does not support the weight of the transfer device and the weight of the passenger.

20. The transfer device of claim **17**, wherein the lower chassis structure is constructed of square tubing or rectangular tubing, and the seating portion is constructed of round tubing or oval tubing.

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